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The Grade-Placement of Addition and Subtraction of Fractions

By LOUIS E. RATHS

Reports of current practices and analyses of textbooks indicate what is being done in the various educational systems and what are the opinions of authors with respect to grade-placement of the topics in the course of study in arithmetic. They do not, however, indicate what should be done. The grade in which a subject is begun is not a solution of the problem of the grade-placement of the units contained within that subject. The attack on the problem developed by the Committee of Seven, a committee appointed by the Northern Illinois Conference on Supervision, offers advantages, and the fact, that the studies reported by the Committee are pioneer in the sense of technique and the use of more quantitative data, suggests the need for a critical evaluation of the method and the results.[1]

The writer had the opportunity of assisting a member of the Committee of Seven in a grade-placement study, The Meaning of Fractions. In his capacity of assistant, the writer directed the investigation of the grade-placement of addition and subtraction of fractions.[2] Upon further study and analysis the method of interpreting the data used in that investigation seems open to question. An outline of this investigation of grade-placement and a statement of the conclusions reported will be presented here as the background for the discussion of an alternative method, the utilization of which refutes some of the conclusions drawn by the Committee of Seven.

[1] Washburne, Carleton. "Mental Age and the Arithmetic Curriculum: A Summary of the Committee of Seven Grade Placement Investigations to Date," *Journal of Educational Research*, XXIII (March, 1931), pp. 210–31. Mr. Washburne was chairman of the Committee.

[2] Raths, Louis Edward. "The Grade-Placement of the Addition and Subtraction of Fractions." 1930. Master's thesis on file in the library of the University of Chicago.

Current practices in the grade-placement of the addition and subtraction of fractions were determined by the use of questionnaires. The returns from 124 school systems of the Middle West show that addition and subtraction of fractions were introduced in the indicated grades:

	Number of Systems
Grade I	1
Grade II	1
Grade III	4
Grade IV	43
Grade V	73
Grade VI	2

The majority of these school systems introduce fractions in the fifth grade, many in the fourth grade, and two in the sixth grade, while one school introduces it in the first grade.

The Committee of Seven in its investigations of grade-placement developed the policy of experimenting in the grade in which the topic was introduced most frequently, in the grade above, and in the grade below. The data collected from 124 cities indicated that the majority of schools introduced this topic in Grade V. Upon the basis of these data, a group of co-operating school systems was asked to teach the topic in Grade V, another group in Grade IV, and a third group in Grade VI. To obtain enough sixth-grade children who were unfamiliar with the topic, it was necessary to ask several systems to postpone the formal teaching of fractions for one year.

For the study of the grade-placement of addition and subtraction of fractions, data were secured from 719 children in twenty cities, representing a total of thirty-three classes in Grades IV, V, and VI. The number of children and the number of classes in each grade are shown in Columns 2 and 3 of Table I. The National Intelligence Tests, Scale A, Form 3, were administered to the children in all three grades. The mean intelligence-test score and the norm for each grade are given in Columns 4 and 5 of the table.

FOUNDATIONS tests were administered before the experiment began, the aim of which was to measure each child's mastery of the facts used in the addition and subtraction of fractions. Two forms of these tests were given. The teachers were directed to correct the first form and on the basis of the results

to teach those facts and understandings which were necessary for mastery of the material. When, in the opinion of the teacher, the children had achieved satisfactory comprehension of this material, the second foundations test was given. These tests were divided into four parts. The first part consisted of the addition combinations, exclusive of those containing zeros. The second part consisted of the subtraction combinations exclusive of those containing zeros. The third part was made up of four problems in the meaning of fractions and referred to situations which did not involve grouping. The fourth and last part of the test consisted of four problems in the meaning of fractions and referred to fractional parts of groups of things.

The co-operating schools were directed to spend not more than twenty-five minutes per day (net time) on the teaching

TABLE I

NUMBER OF CLASSES AND NUMBER OF CHILDREN ARRANGED BY GRADES TOGETHER WITH THE MEAN INTELLIGENCE-TEST SCORES AND THE NORM FOR EACH GRADE

	NUMBER OF CLASSES	NUMBER OF CHILDREN	INTELLIGENCE-TEST SCORES	
			Mean	Norm
(1)	(2)	(3)	(4)	(5)
Grade IV	10	221	77	69
Grade V	18	393	87	84
Grade VI	5	105	96	102
Total	33	719	85	.....

of the topic. Since the most common time-allotment in the intermediate grades for daily work in arithmetic is thirty minutes, it was presumed that a smaller number of schools would be inconvenienced if this time-allotment were allowed for the teaching period in the experiment.

All co-operating teachers were directed not to assign home work. The time for the duration of the experiment, in the present case ten weeks, was determined by the teaching records of the fifth grades of the Winnetka public schools supplemented by the judgments of the members of the Committee.

Achievement tests were given on the first day of the experiment and at the close of the fourth and of the seventh week. The teaching period ended with the tenth week, and on the last day a final test was given. The teachers were asked not to review the materials after the close of the teaching period,

and six weeks from the last day of teaching a retention test was administered. All of these tests were similar in form and were developed with the idea of having the results comparable.

Several assumptions were made in the construction of these tests; for example, in each of the last two tests the first question involves the reducing of fractions to lowest terms. The assumption accepted is that reducing 8/10, 3/12, and 15/25 to lowest terms is comparable in difficulty to reducing 12/16, 9/15, and 35/40 to lowest terms. The writer is not at all certain that this is true. In each case, of course, the first fraction may be reduced by dividing numerator and denominator by two, the second fraction by three, and the third fraction by five. Similar assumptions were made in each of the examples which composed the battery of tests.

There were forty questions on each of the tests, and in tabulating the results each example was given equal weight. These questions were divided into four divisions:

Part I included reducing fractions to lowest terms, changing proper fractions to equal fractions of higher denomination, changing improper fractions into mixed numbers, and changing mixed numbers into improper fractions.

Part II comprised the adding and subtracting of fractions with like denominators.

Part III consisted of examples involving the addition and subtraction of mixed numbers with both like and unlike fractions. No examples involving borrowing were included in this division.

Part IV contained examples involving the subtraction of mixed numbers with the element of borrowing present.

This classification served a valuable purpose. It tended to discriminate between portions of the test and the test as a whole.

In the evaluation of results three sets of test scores were used. These represented the second foundations test, the retention test in the topic given six weeks after the close of the teaching, and the intelligence test.

The foundations test consisted of four parts: addition facts, subtraction facts, and two types of problems involving the meaning of fractions. The assumption was that these were the prerequisites to the effective learning of addition and subtraction of fractions. The results were tabulated separately for each part of the test in an endeavor to measure the influence of

each on learning. The standard of effective learning set up was that three-fourths of a class should score 80 per cent or more on the retention test.

When the scores on the addition test were analyzed and classified into half-sigma intervals of achievement it was found that some children who made low scores on the addition part of the foundations test realized the standard set up for the effective learning of addition and subtraction of fractions. In interpreting these data, the Committee argued that to reach the standard set up it would be necessary to select an interval of accomplishment on the foundations test in addition in which this proportion was actually met. The Committee said that a lower prerequisite score could not be set up, for in the lower intervals less than three-fourths of the children had achieved

TABLE II

NECESSARY PREREQUISITE SCORES ON THE FOUNDATIONS TEST

Part	Subject	Per Cent
(1)	(2)	(3)
I.....	Addition facts	96 to 100
II.....	Subtraction facts	97 to 100
III.....	Understanding of simple fractions, not involving grouping	100

the prescribed standard of accomplishment. With the last part of that statement no exceptions can be taken, for it is based on facts. But it may well be that a lower prerequisite score can be set up without destroying the arbitrarily determined standard.

In harmony with their interpretation of the data the Committee proceeded to select the minimal prerequisite score in addition. An interval was selected in which three-fourths of the children made scores of 80 per cent or more on the test in the addition and subtraction of fractions. In addition this meant scores between 96 and 100 per cent (*see* Table II). The Committee then argued that since this was the prerequisite score, all children who made scores on the addition test lower than this were to be eliminated from further consideration in the experiment. Children with lower scores had met the standard for learning in the topic; but, it was argued, in none of the intervals

of these lower scores did three-fourths of the children achieve this objective. There was not a one-to-one correspondence between the two sets of test scores, but in the face of the evidence and to meet the requirements of the standard the Committee decided that high scores in addition were required to make high scores in the addition and subtraction of fractions.

Any study of the technique employed by the Committee of Seven at once raises the question: What shall be done about those children who achieved the standard in learning, but who did not achieve the prerequisite score? It is possible to eliminate them from consideration when they are represented by test scores, but they are not to be eliminated from classrooms or from the schools. Their prerequisite scores indicate a lack of readiness for learning, but the results indicate the opposite. It is absurd to draw the conclusion that the results are at fault; it is, rather, a clear indication that the prerequisite is an inaccurate determiner of readiness for learning. In other words, the use of a technique which disregards these facts is to be avoided.

The Committee then analyzed the results of the subtraction test, and established a high prerequisite score with the consequent elimination of a number of children who had not achieved this prerequisite, but who had achieved the objective in addition and subtraction of fractions. The same procedure was followed with the third prerequisite, the understanding of fractions not involving groups of things; and again a number of children was eliminated.

In the fourth prerequisite, the understanding of fractions involving grouping, the scores were uniformly spread across the table. At the highest interval three-fourths of the children achieved the standard, but this represented such a small number of the children that the Committee decided that it was not a necessary prerequisite to the learning of addition and subtraction of fractions.

The establishment of these prerequisite scores and the principle of eliminating children who had not achieved the scores resulted in diminishing the number of children from 719 to 222. Half-sigma intervals were computed from the scores made by these 222 children on the intelligence tests, and the achievement-test scores of each interval were examined. Where three-fourths of the children in an interval had achieved 80 per cent or more on the test in adding and subtracting fractions, the

objective had been met. This mental-age interval was then translated into terms of grades, and the grade-placement had been accomplished.

This was done for the unit as a whole (the addition and subtraction of fractions) and for different elements within the unit. The final grade-placement of each topic of addition and subtraction of fractions as a unit and of each element of the topic, based upon the standard that three-fourths of the children should achieve scores of 80 per cent or more on the retention test, providing that the children at that level of mental age have made the necessary achievement in the prerequisites for the topic, is as follows:

Subject	Mental Age in Years and Months
Addition and subtraction of fractions considered as a unit	11–0
Part I.—Reducing fractions to lowest terms, changing fractions to equal ones of higher denominations, changing mixed numbers to improper fractions, and changing improper fractions to mixed numbers	9–8
Part II.—Adding and subtracting proper fractions with like denominators	9–5
Part III.—Adding and subtracting proper fractions with like denominators, and adding and subtracting mixed numbers, exclusive of borrowing	13–2
Part IV.—Subtracting mixed numbers involving borrowing	13–9

IF THE technique employed by the Committee of Seven is faulty, what shall take its place? The experimental data collected by the Committee may well be subjected to statistical procedures of multiple correlation. The coefficients of correlations for each pair of variables employed are presented in Table III, while the coefficients of multiple correlation with their probable errors of estimate are presented in Table IV.

An analysis of this latter table yields interesting implications. When all of the variables are employed, there is a total correlation of .66. When only the results of the test in subtraction and the results of the test in the meaning of fractions not involving grouping are employed, the total correlation is .63. There is a difference in their probable errors of .08, and this difference is far from significant. Using three prerequisites, subtraction, grouping, and non-grouping, yields a multiple correlation of .65. The contribution which intelligence-test scores

make to the prediction, in other words, is represented by .01. Intelligence-test scores surely are not significant in their influence on grade-placement; their contribution to the prediction is almost negligible. Scores made on the addition test correlated relatively low with the criterion and relatively high with the other prerequisites. Hence, it makes only a slight contribution to the correlation.

TABLE III

CORRELATION CHART

	Retention Test	Intelligence Test	Subtraction	Non-grouping	Grouping	Addition
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Retention test	.....	.44	.51	.50	.45	.40
Intelligence test	.....	.....	.37	.36	.39	.25
Subtraction	.....	.....	.....	.25	.28	.57
Non-grouping	.....	.....	.....	.....	.55	.21
Grouping	.....	.....	.....	.....	.....	.21
Addition	.....	.....	.....	.....	.....	.....

TABLE IV

COEFFICIENTS OF MULTIPLE CORRELATION AND PROBABLE ERRORS OF ESTIMATE

R	Value of *R*	*PE* of Estimate
$R_{1(2345)}$	.66	5.07
$R_{1(234)}$	.65	5.13
$R_{1(345)}$	.65	5.15
$R_{1(34)}$	.63	5.15
$R_{1(23)}$	.60	5.44
$R_{1(45)}$	.58	5.52
$R_{1(56)}$	.54	5.69
$R_{1(23)}$	.54	5.75

1=Retention test
2=Intelligence test
3=Subtraction
4=Non-grouping
5=Grouping
6=Addition

IN ITS conclusions, the Committee of Seven places this topic in Grade V if the minimal requirements in prerequisites have been met. The statistical data show that intelligence-test scores do not influence the placement, and that scores made on the addition test do not influence it. Hence, these two factors may be waived.

The prerequisites established for subtraction and the meaning of fractions which do not involve grouping, however, do have significant influence on the achievement in learning. The

relationship is represented by a multiple correlation of .63. This is not high enough to be used for prediction in individual cases, but it is sufficiently high to predict success within a range of 10 points in eight out of ten cases. The regression equation is

$$X_1 = .202\,X_3 + 3.89\,X_4 + .74$$

where

X_1 = predicted score on the retention test
X_3 = subtraction-test score
X_4 = score on test in meaning of fractions in which grouping is not involved

Interpretations of these data which include statements tending to emphasize or magnify the influence of intelligence, as measured by scores on intelligence tests, on the results of learning and teaching the addition and subtraction of fractions are without foundation in fact. Conclusions of this nature can be drawn only from data which remonstrate a high degree of relationship between intelligence-test scores and the results of teaching and learning. The data presented in this paper indicate that this high relationship does not exist.

WHEN we turn to the published report of the experiment and find statements emphasizing the great importance of high scores on intelligence tests or mental ages derived from those scores, it is difficult to see how these conclusions follow from the data. The following quotations illustrate the conclusions reached by the Committee of Seven:

> The [C]ommittee's results, to date, indicate clearly that for each arithmetic topic there is a stage in children's mental growth before which it is ineffective, if not futile, to teach that topic, but after which most children can learn it with reasonable effectiveness.
>
> . . . . . .
>
> The relation between mental age and ability to retain any given process is the other outstandingly important factor. It is this relationship which clearly indicates that there is a time before which it is ineffective to teach a given process and after which that process can be taught with comparative facility and with a reasonable degree of certainty of satisfactory retention.
>
> . . . . . .
>
> There is a point in a child's mental growth before which it is not effective to teach a given process in arithmetic and after which that process can be taught reasonably effectively. The child's preceding grasp of those facts and processes that enter into the new topic he is

going to study is even more important than the mental level he has reached. Through mental testing and achievement testing, a teacher can, and should, determine when the children in her class are ready to undertake a new process, and either through ability grouping or individual work should see that each child gets the arithmetic for which he is ready at a time when he is ready for it.

. . . . . .

To attempt to teach a topic before either the minimum or optimum stage of mental growth is reached is not merely to waste much time and effort on the part of the teacher and pupil, but to doom a considerable number of children to failure, and a much larger number to that hazy half-knowledge, so characteristic of children's grasp of arithmetic and so inimical to the clear thinking and sure-footed progress that should characterize the study of mathematics.[8]

THE subject of this paper has been primarily a consideration of method. Certain criticisms of the experiments of the Committee of Seven in grade-placement extend beyond method. A critical evaluation of the tests employed in the experiments might reveal many opportunities for improvement; in fact, the inadequacies of the test in the addition and subtraction of fractions are evident, and it is possible that better tests might yield results different from those secured. Only further experimentation along the same lines will prove this.

Moreover, it is possible to believe that the grade-placement of topics in the course of study depends upon other factors besides efficiency of learning and teaching. A topic might be placed where it is the most useful in the light of its value in teaching other courses; it might be placed where it is most interesting; it might be placed where it is closest to the time of use in life; or a combination of these factors might be considered. The evaluation of the grade-placement might involve reference to immediate outcomes in the topic (to follow the example of the Committee of Seven) or reference to the retention of the subject materials over a longer period of time. Some other variables, which enter into the final placement when these problems have been solved, and which were not considered by the Committee of Seven, are the caliber of the instruction, the length of the school year, the laws of the different communities regarding minimum entrance age, the type of the community, and the general factors which relate to the efficiency of the school system.

[8] Washburne, *op. cit.*, pp. 210, 213, 289, 231.

George Washington and Education

By H. G. GOOD

PROGRAMS marking the bicentenary of the birth of Washington should not omit consideration of him as a pupil, patron, and intended founder of schools. Especially appropriate for consideration would this be when the programs are given in schools or by school children. And contrary to what I believe is the popular notion on the subject, Washington held matured views on education and manifested an active interest in it. My main purpose here is not to discuss this topic—that would require a good deal of space—but rather to name several books and periodical articles that will prove helpful to teachers having in hand the making of bicentenary programs. The gist of the article is in the footnotes. The subject may be considered under four topics: his schooling and the school conditions of his day; his self-education; his activities in connection with schools; and his educational views.

In his childhood Washington was a schoolboy and one who showed no extraordinary qualities. The schools available were doubtless poor institutions; and any clear glimpse, however brief, of the educational destitution of his time and place will make our schoolboys thankful, skeptical and satirical as they are in such matters, for the two centuries of educational progress which lie between his childhood and theirs. The schools were poor, and he was not greatly interested: not a fortunate combination. Jonathan Boucher, the teacher of Washington's stepson, says that "George, like most people thereabouts at that time, had no other education than reading, writing and accounts which he was taught by a convict servant whom his father bought for a schoolmaster"; but Boucher was an inaccurate and unfriendly reporter. Washington learned other things than those named, and he had more than one teacher, but the phrase about the convict schoolmaster may be correct. Besides this earliest teacher there seem to have been two others, one named Williams and the other the Rev. James Marye, by whom the boy was introduced, although perhaps barely introduced, to the mysteries of the Latin tongue. From Marye, who was a Hugenot, he might have learned French but did not; nor did he learn it from the French officers of the Revolution.

Washington was throughout a poor linguist. He never learned to spell or to write grammatically his native tongue; but he acquired a good, round hand and learned to compose fluently in a direct, dignified, and unornamented style. He never became a reader. Although in the course of a lifetime he collected a considerable parcel of books, there is pretty good evidence that he never read many of them. Jefferson tried to sum up Washington's education when he said that "he wrote readily, rather diffusely, in an easy and correct style. This he had acquired by conversation with the world, for his education was merely reading, writing and common arithmetic, to which he added surveying at a later day."[1]

That Washington was not sent to Appleby School, England, as his father and older brothers had been may have been due to the father's early death. And the Washingtons apparently did not maintain a family school although there was a schoolhouse at Mount Vernon.[2] Therefore, except for the schools already mentioned, George had to depend upon his own efforts supplemented with the occasional guidance of men of affairs, and "conversation with the world."

If his opportunities for schooling were slight, those for self-education were not much more abundant. Yet there came into his hands one of the compendious study-books of a once famous genus, variously entitled *Secretary's Guide, Youth's Instructor, Youth's Assistant, Young Man's Companion, Young Man's Best Companion,* and so forth, and usually containing a congeries of materials, spelling lists, copybook models, the rules of arith-

[1] On George Washington's school days *see:*

Ford, Paul Leicester. *The True George Washington.* Philadelphia: J. B. Lippincott Company, 1897. 319 pp. Chap. III.

Mitchell, S. Weir, M.D. *The Youth of Washington Told in the Form of an Autobiography.* New York: Century Company, 1905. 292 pp. First seventy-odd pages.

Wister, Owen. *The Seven Ages of Washington, A Biography.* New York: Macmillan Company, 1908. 263 pp. Especially pp. 28–35; 122–25.

These three books give all the known facts about Washington's schooling and schoolmasters. Others that will be useful if these are not at hand are:

Conway, Moncure D. *George Washington and Mount Vernon . . .* Brooklyn, New York: Long Island Historical Society, 1889. 352 pp.

Lodge, Henry Cabot. *George Washington* (American Statesmen Series). Boston: Houghton Mifflin Company, 1889. 2 vols.

Little, Shelby. *George Washington.* New York: Minton, Balch and Company, 1929. 481 pp.

Van Dyke, Paul. *George Washington, the Son of His Country, 1732–1775.* New York: Charles Scribner's Sons, 1931. 310 pp.

Hughes, Rupert. *George Washington, The Human Being and the Hero, 1732–1762.* New York: William Morrow and Company, 1926. (This is volume one of a long work still in process. Three volumes had been issued by 1930.)

The last-named writer solemnly reprints (pp. 37–38) as though it were a genuine

metic, legal forms, sets of practical directions for surveying, planting, grafting, cider-making, doctoring the sick, polite behavior, and other how-to-do's. The particular book used by Washington was the thirteenth London edition of W. Mather's *The Young Man's Companion or Arithmetick Made Easy* and so on to form a descriptive title of more than one hundred words. Finally, it is claimed that it is "Written in a Plain and Easy Style that a Young Man may Attain the same without a Tutor." On the engraved models in this book, Washington's hand was formed. From it he learned arithmetic and the first elements of surveying. It provided a larger portion of his real education and had a more clearly traceable influence upon his life than any other book whatsoever. Probably he studied it out of school but that is not at all certain. Other out-of-school education there was. Some think the "Rules of Civility" made their mark, but it may be doubted. He did have aid in the study of military tactics, of the use of the broadsword, and of surveying.[3]

PROVIDENCE left him childless, but for a quarter of a century a succession of fledglings graced his doorstep, placed there by the widow he married, by her son, by his friends, and even

document, a "supposed" letter from Lord Fairfax to Mary Washington which is found in Mitchell, *The Youth of Washington Told in the Form of an Autobiography* (pp. 76–77). The letter has a high-gloss finish and is very much in character, so much so in fact as instantly to arouse suspicion. It is undated as are all the other letters scattered through the book. And finally, the form of Dr. Mitchell's work, *see* title given above, clearly gives him the literary license to compose imaginary letters. Such an explanation may seem unnecessary, but it evidently is not; nor will it be superfluous to remark that this is not to be taken as a general criticism of Rupert Hughes' important work.

The life by Shelby Little is one of the finest one-volume biographies, and, while it does not have much material on the school days, it is excellent on Washington's later educational activities.

To go to the older biographies by A. Bancroft, Marshall, Irving, and their contemporaries for material on this topic is useless. Irving, for example, dismisses the whole matter in a paragraph and apparently does not mention the national university idea.

[2] What these mansion-house schools in a rich Virginia family were a generation later may be seen in two schoolmaster's diaries, as follows: The *Journal* of Philip V. Fithian (reprinted in part) in the *American Historical Review* V (January, 1900), pp. 290–319; and the *Diary* of John Harrower, same magazine, VI (October, 1900), pp. 65–107. The former of these, edited by J. R. Williams, has been printed in full and published by Princeton University from which college Fithian graduated, 1772.

[3] An interesting but uncritical account of the autograph copy of the *Young Man's Companion* used by Washington and of its discovery by some Union soldiers in the Civil War was published in the *New York Tribune* for January 19, 1866, p. 8, column 1; and was reprinted in *The Historical Magazine* . . . (Morrisania, New York, Henry B. Dawson), Vol. X (1866), pp. 47–48. These give the full title-page of the volume. The *Historical Magazine* gives an erroneous date for the appearance of the article in the *Tribune*. The correct date is that just given, and the article is entitled, "A Valuable Relic." I have not seen the book in question.

his old comrades-in-arms. And he took them up one by one and tried to rear them, sometimes without much success. The Father of His Country had sufficient practice for the part that posterity has assigned him. Washington's care and patronage of the education of his adopted children, of his wards and nephews, of the sons of several of his friends, and of the poor is best shown in his diaries. For the purposes of this paper, I have copied out sixty or more entries having to do with these matters. Altogether they reveal an active personal interest in education and schools, and the material has never, so far as I have noticed, been assembled and interpreted. Many of the items, indeed, are of minor significance, and the following are offered not as typical but as especially interesting examples.

Under date 23 November, 1785, Washington says:

> Sent Mr. Shaw through Alexandria to agree for the Schooling and Board of my nephews George Steptoe and Lawrence Washington now at the Academy at George Town, and thence to the latter place to conduct them to the former for the purpose of going to School at the Alexandria Academy.

To this the editor subjoins the footnote:

> The Academy at Alexandria was established through the energies of Dr. William Brown. Washington was made one of the trustees. The Reverend Mr. McQuerr, a Presbyterian clergyman [and a visitor at Mount Vernon] was apparently one of the teachers.[4]

In his general correspondence, in his Messages to Congress, in the Farewell Address, and in his Will, Washington declares his views on education and especially his interest in a federal or national university. The idea of such an institution was first developed by Dr. Benjamin Rush. James Madison in the Convention of 1787 proposed to include among the powers of Congress in the Constitution the power to establish a federal university. Washington's first public reference to the need for such an institution occurs in his first Message (January 8, 1790). He urged it again in the Message of December 7, 1796. He wished to bring the matter to the attention of the nation through the Farewell Address, but Hamilton, who prepared the final draft, substituted instead the general clause which began,

[*Continued on page 54*]

[4] Fitzpatrick, John C. *The Diaries of George Washington.* Boston: Houghton Mifflin Company, 1925. 4 vols. The quotations above are taken from Vol. II, p. 446. The volumes are edited, annotated, and indexed.

EDITORIAL COMMENT

WHEN the teacher reads the collection of misinformation found in a recent product of adolescent wisdom gleaned from examination papers and published in *Boners* by the Viking Press, he is at first amused, then critical, and finally thoughtful. He is amused by such gems as: "An antidote is a funny story which you have heard before." "A magnet is a thing you find in an apple." "Isosceles triangles are lines used on maps to join up places with the same weather." "A grass widow is the wife of a vegetarian." "Socrates died from an overdose of wedlock." "Keats is a poet who wrote on a greasy urn." "Charon was the man who fried soles over the sticks."

He is critical when he muses upon the theme of modern youth in schools and concludes that each generation is growing dumber as the years go by. He becomes thoughtful when he notices that these "boners" are not "pulled" by morons. They are merely words half-learned by pupils who are bright.

When a boy asserts that "Charon is the man who fried soles over the sticks," he has learned something. In fact, he almost has the idea. The sentence looks foolish on paper, but through the ear it sounds reasonable if one pronounces *ferried* rather rapidly. Then he would say, "Charon was the man who ferried souls over the Styx." *Greasy urn* sounds like *Grecian urn*; *antidote* approximates *anecdote*; *isosceles* resembles *isotherm*; *grass* is a species of vegetable; and *wedlock* is a compromise between *hemlock* and the student's memory of Socrates' trouble with his wife.

These children are bright. If they were morons their answers would be dull. They are amusing because they learn words partially, but not quite well enough. This interpretation turns the thought of the teacher inward. We are partners in the comedy. These "boners" are school words, not known to children when they enter school, but acquired under our direction from books which we prescribe. We therefore have some responsibility with the failure.

Fifty years ago the schools stressed the learning of meanings, but unfortunately they taught the meanings apart from

the context, which was a pedagogical mistake. More recently we have come to think that meanings can be learned most efficiently by being picked up in context, and with our single-track pedagogical minds which must abandon an old idea when we take on a new one, we have ceased to insist upon accurate meanings.

Certainly, in the junior and senior high schools, the children are old enough to be pressed to use exact language. Each subject has its own vocabulary, and if the meanings of its technical terms are not learned with reasonable accuracy, the student cannot become competent in the subject.

Vocabulary lists to be learned and checked are considered out of date by most teachers, but we must insist that vocabulary drills are not invalidated by a doctrinaire opinion based upon a theory. There is an important place for exercises in every lesson in which new words and familiar but difficult words are actually pronounced (even in concert) until the pronunciation is accurate and facile, and where words are explained until the explanation can be and is reproduced by the class. Without such facility, thinking in a field is "fuzzy" and even impossible.

We complain that when children drop the "slanguage" of their out-of-school conversation and try to confine their statements to the exact technical terms of the subject under discussion, they are awkward, incoherent, or speechless. The cure lies in specific attention to the facile pronunciation and clear understanding of the terms which are indigenous to a subject.

A student is being deprived of his rights if he finishes a course without an easy ability to use the vocabulary which is used in the field. To safeguard this right, the teacher must both patiently explain meanings and firmly insist upon the accurate use of technical terms.

W.W.C.

Changes in Educational Journals

THERE have been several important changes of policy and arrangement among the educational magazines within the last year.

The *Harvard Teachers Record* in its present dignified format made its first appearance in February, 1931. It was not a "new venture in educational journalism" but continued a

series begun several years ago, the occasional issues of which had appeared as addenda to the *Harvard Alumni Bulletin.* In its new form, the *Record* is sponsored by the Harvard Graduate School of Education, the Alumni Association, and the Harvard Teachers Association, but it may be obtained by persons not belonging to these organizations by the payment of a modest subscription rate.

The *Teachers College Bulletin on Higher Education* began its third volume in the issue bearing the date November, 1931. Although it was started two years ago primarily for the use of the students in courses in higher education at Teachers College, Columbia University, it is now obtainable upon a subscription basis for persons interested in the subject-matter to which it is devoted. A limited supply of back numbers is available.

Science Education, the official organ of the National Association for Research in Science Teaching, in October began its sixteenth volume under a new editorial arrangement with Charles J. Pieper, as editor. The major aim of the journal according to editorial statement is the improvement of science teaching in elementary schools, in secondary schools, in institutions for the education of teachers, and in colleges.

New magazines have appeared in spite of the general economic depression. In January of last year there appeared the first issue of a small magazine with its purpose in its title, *Understanding the Child.* This magazine is published by the Massachusetts Society for Mental Hygiene from funds provided by Godfrey M. Hyams Trust and is sent free of charge to every public-school teacher in the state.

The American Educational Research Association in January, 1931, distributed the first of the five issues of the *Review of Educational Research* which appeared during the year. The purpose of the Association is to divide the literature of educational research into fifteen fields, each of which will be covered once in a three-year cycle. Groups of scientific studies have been reviewed in running commentary in the sections of each issue; each commentary has been supplemented by a searching bibliography. The topics to which the five issues of the last year have been devoted are: the Curriculum, Teacher Personnel, School Organization, Special Methods, and the Psychology of School Subjects.

During the fall the first two issues of the *A.A.T.C. Quarterly*—the official organ of the American Association of Teachers' Colleges—have appeared. The board of editors appointed by the president of the Association includes the presidents of three state teachers' colleges, Samuel Duke, of Harrisonburg, Virginia; Charles Finley, Montclair, New Jersey; and E. C. Higbee, president, Wilson Teachers College, Washington; F. L. Whitney, director of research, State Teachers College, Greeley, Colorado; and Dean E. J. Ashbaugh of the School of Education, Miami University, who is chairman. The editorial suggestions in the first issue include requests for short articles, not to exceed two thousand words, which deal with problems of "wide interest in the teacher-training field."

Educational Law and Administration has not only made a recent appearance, but it is as well the private venture of its editor, M. M. Chambers, Teachers' College of Kansas City. This sixteen-page quarterly is to serve as an organ of research and a clearing-house of current information on the legal aspects of educational administration.

The *Library Quarterly* was established by the Graduate Library School of the University of Chicago, with the assistance of the Carnegie Corporation, to provide an avenue for reporting investigations regarding librarianship. This new journal is beautifully printed and its format distinguished. The most recent arrival in the field of educational journalism is another magazine which will be rightly famous for its distinguished, not to say beautiful format. *The American Scholar* which succeeds *The Phi Beta Kappa Key,* is the official journal of the National Council of Phi Beta Kappa. Its objectives are: the promotion in America of liberal scholarship; a medium for scholars and all persons who are interested in intellectual pursuits, higher learning, and the cultural development of America; a synthesis of the arts and sciences essential to liberal education and a guiding philosophy of life; an *esprit de corps* among the educated; the scholar's responsibility for major social tendencies; and a whole diet for the whole mind.

With an impressive list of famous persons in the Council and on the Editorial Board, the reader without a key is glad to know that *The American Scholar* is not only for members of Phi Beta Kappa but for all who have general intellectual interests. J.H.M.

READINGS

KEFAUVER, GRAYSON N., AND BULLARD, CATHERINE. "The Organization of the Junior College as an Agency of Democracy," *Teachers College Record*, XXXIII (December, 1931), pp. 251–61.

Data from 48 public and 56 private junior colleges regarding the degree of integration of the junior college with the secondary school revealed that in the modal case the junior college is in the same building with the senior high school but in a separate section; that the junior-college and senior-high-school students do not participate together in any activities; that junior-college students enroll in high-school classes with high-school credit; that high-school students enroll in junior-college classes with college credit; that some of the junior-college teachers also teach classes in the senior-high school; and that both the junior college and the senior high school are under the same administrative head.

Differences found between the public and private junior colleges were that in the majority of the private colleges the high school and the junior college were under the same head, while in the majority of the public junior colleges the headship of the junior college was entirely independent of the high school; and that in the majority of the private colleges the college and high-school students participated together in all activities, whereas in the public junior colleges the majority did not participate together in any activities. In the private colleges there was less distinct separation in the housing of the college and high-school students.

FORBES, A. W. "Unemployment, a Problem for the Educator," *Social Science*, VI (October, 1931), pp. 362–67.

Unemployment occurs to quite an extent because many people are becoming misfits through aiming in the wrong direction. Thus, good mechanics are becoming poor foremen while there is a shortage of good mechanics. Much possible work is not being undertaken by industrial concerns because they cannot find adequate ability available for carrying it out.

The author contends that education must find a solution. He suggests that along with enthusiasm for the value of a college education should go knowledge of the harm that may come from training not adapted to the individual. Discernment and direction of ability rather than promotion of ambition are necessary. Those who find difficulties in technical courses should be diverted into other lines of achievement rather than aided over their difficulties. More early training in the technical lines is also good along with more careful consideration of the standard measures, differential birth rates, business cycles, seasonal industries, installment selling, and foreign loans.

BENNETT, IVA PASCO. "Some of the High Lights of Health Education in the Public Schools of Syracuse, N. Y." *Journal of Educational Sociology*, V (December, 1931), pp. 243–44.

By diverting the eating of cheap candy to the eating of apples, the children now have no more complaints of headache or stomach ache and the

number of colds has been diminished. The technique used was to create "the style to eat apples" and it worked.

The health program was correlated with the English program in the written expression of ideas on health topics. Sanitary and safety conditions and food selection in the cafeteria were investigated by the Health Club which resulted in improvements of the conditions and habits of the children.

MUNTZ, EARL E. "Accidents and Safety Education," *Journal of Educational Sociology*, V (December, 1931), pp. 215–24.

The writer calls attention to the need for safety education in the schools. Since 1921, accidents have increased. The increase has been due almost entirely to motor-vehicle accidents. In 1921, automobile accidents amounted to 11.4 per 100,000 population; in 1929, 23.3 per 100,000 population. The increase in number of motor vehicles increases the chances of an accident and demonstrates the need of this particular type of education for modern society. Safety education may be extended for the prevention of home accidents, the most common of which is falls.

BECKER, CARL H. "Secondary Education and Teacher Training in Germany—The New Program of Secondary Education in Germany," *Teachers College Record*, XXXIII (December, 1931), pp. 262–78.

The reforms in secondary education in Germany and especially in Prussia since the war are rather thoroughly explained by the author who was for eleven years Minister of Education of Prussia. The trends have been in the direction of breaking down the barriers between the elementary and secondary schools in Germany and in giving teachers much more freedom in their teaching. It is now considerably easier for large numbers of students to attend the secondary and professional schools, and a great increase in the number of such schools has come about since the war. Some changes in the training of elementary-school teachers are also discussed.

WALTERS, RAYMOND. "Statistics of Registration in American Universities and Colleges, 1931," *School and Society*, XXXIV (December 12, 1931), pp. 783–96.

Dean Walters gives an early report of the data collected in this field during the present year. In spite of the present economic stringency, the enrollment of full-time students is about six-tenths of one per cent above that of last year and 12 per cent above that of the prosperous year of 1926.

The larger colleges and universities are ranked according to the number of full-time students and the number of all resident students in attendance. Interested individuals will find here a valuable source of data on this subject.

PUGSLEY, C. A. "The Principal's Part in Promoting a Progressive Education Program," *School Executives Magazine*, LI (January, 1932), pp. 204–206, 234–35.

Long use of teaching techniques does not establish validity or justify their further use. Retention or addition of practices should be based upon scientific discoveries when possible. The principal should be discovering and interpreting the principles of progressive education and leading his teachers into the understanding of modern ideas and tendencies in education. He

should evaluate his school organization in terms of the new thinking and strive to adapt the curriculum and practices of his school toward achieving higher ideals and goals.

LONGSHORE, WILLIAM T., AND CRAMER, ROSCOE V. "Evaluating the Supervision of the Elementary Principal," *School Executives Magazine*, LI (January, 1932), pp. 201–203, 230.

Only three of the forty teachers' college catalogues examined offer courses in supervision for classroom teachers. Such courses should give teachers an understanding of the aims and philosophy of effective supervision so that they would seek and thoroughly welcome its values. No teacher is so good that improvement is impossible or undesirable.

The principal should be responsible for the improvement of teaching and for checking the values of various supervisory activities. Ability to suggest valuable remedies for evident weaknesses, facility in commending good techniques of teaching, and a program that recognizes individual differences in teachers are essentials of a good elementary principal.

In Paper Covers

MARSHALL, M. V. *Education as a Social Force.* Cambridge, Massachusetts: Harvard University, 1931. xxix+161 pp. (Harvard Bulletins in Education, No. 18)

This is a report of a study of the teacher-training program in Nova Scotia. Several criteria and principles based on the nature of the educative process and the relation of the teacher-training program to its social setting were derived for evaluating a program for teacher training. The adequacy of the program in force at the time in Nova Scotia is discussed in terms of the criteria and principles set up. Finally, proposals are made for a progressive program for the training of teachers in Nova Scotia. The worth of studies which evaluate a program on desirable criteria and construct a better program is apparent. It will be interesting to obtain a report of the success of the application of the proposals to the program of teacher training in Nova Scotia.

FRED P. FRUTCHEY

AMERICAN CHILD HEALTH ASSOCIATION. *School Health Progress.* New York: American Child Health Association, 1930. 343 pp.

AMERICAN CHILD HEALTH ASSOCIATION. *Principles and Practices in Health Education.* New York: American Child Health Association, 1931. 485 pp.

These two volumes are the records of addresses and discussions from the fifth and sixth Health Education Conferences, arranged by the American Child Health Association. The fifth conference, reported in the former volume, was held on June 17–22, 1929, and the sixth, reported in the latter volume, on June 16–21, 1930; both took place at Sayville, Long Island. The conferences were important since they included many of the leaders in the field of child health, and the reports probably furnish the best available summary of the latest ideas and practices of these leaders. Most of the space in the books is taken up by short talks, presumably largely impromptu, and with detached remarks, questions, and answers, and the like, with "discussion." The

more extended contributions, including several by outsiders, as well as those by specialists in health education, vary greatly in quality, as is to be expected. On the whole, the volumes suffer from the defects inherent in their nature as convention reports, but they are important documents that should be read by all who wish to know about developments in health education.

DARWIN A. HINDMAN

HUNT, CLARA WHITEHILL. *The First Three Hundred Books of the Children's Library.* Albany, New York: University of the State of New York, 1931. 16 pp. (University of the State of New York Bulletin, No. 971)

The superintendent of children's work of the Brooklyn Public Library presents a revised list of children's books, intended to serve as a guide toward making foundation collections for children's sections of public libraries. Both classics and modern books are included in the list which covers a wide range of material.

FRANCES KIRKPATRICK

WILSON, FLORENCE H., AND WILSON, HOWARD EUGENE. *Bibliography of American Biography.* Iowa City, Iowa: National Council for the Social Studies, 1930. 64 pp.

The careful techniques used by the compilers, as outlined in the Foreword, give the reader an excellent first impression, but the effect of the whole is slightly marred by the fact that the divisions of the sections are not very distinctly marked. An important feature of the section on "Biography in the Teaching of American History" is the score card for analyzing a biography. Following this is the body of the bibliography which lists fifty selected titles in collective biography, followed by the individual biographies arranged according to historical periods. Brief evaluating annotations increase the worth of this section.

MARY REBECCA LINGENFELTER

Addresses and Papers by Frank Pierrepont Graves, President of the University of the State of New York and State Commissioner of Education, 1926–31. Albany, New York: University of the State of New York, 1931. 354 pp.

In chronological organization, the papers and addresses which have been given during the past five years by the Commissioner of Education of the state of New York are here presented. While many are so temporary and local in content and purpose as to afford little interest except to the student of the office which Mr. Graves holds, others represent real contributions to the literature of education.

FRANCES KIRKPATRICK

ROCK, ROBERT T., JR., AND FORAN, T. G. *A Comparison of Studies on the Relative Difficulty of the Number Combinations.* Washington: Catholic Education Press, 1930. 26 pp. (Educational Research Bulletin, Vol. V, No. 8)

The combinations are listed according to two composite rankings. One relates to all grades of the elementary school and the other to the lower grades only. The composites include the results of all research workers. The rank-

ings are given in detail together with the differences which are found among them. They are of great practical value to those who wish to order instruction in arithmetic upon this basis. The chief value of the monograph, however, lies in the fact that it gives a complete bibliography and discussion of all of the studies in its field.

W. J. OSBURN

BANGS, CECIL WARREN, AND GREENE, HARRY A. *Teachers' Marks and the Marking System.* Iowa City, Iowa: University of Iowa, 1930. 44 pp. (College of Education Series, No. 26)

Pointing out the need for validity, objectivity, and reliability, assuming that subject-matter in the different grades is "properly fitted to the group of pupils of average ability," and implying that "such intangibles as attitude, effort, ability, and interest" should not affect teachers' marks, the authors endeavor to set up a constructive program for objectifying grading. The suggestions include: the use of a five-point letter scale, with a detailed definition of each of the points in the scale; the measurement of the pupils' abilities by objective tests whenever such tests are possible; the use of a standard-deviation technique for the allocation of the letter grades or—if this seems too complicated—a "counting-in" method based on a flexible normal probability curve; and the use of various administrative publicity devices for calling the marking problem to the attention of the teachers.

T. ERNEST NEWLAND

HICKS, JAMES ALLAN. *The Acquisition of Motor Skill in Young Children.* Iowa City, Iowa: University of Iowa, 1931. 80 pp. (University of Iowa Studies, Studies in Child Welfare, Vol. IV, No. 5)

An analysis, after a brief review of the literature, of the influence of systematic motor activity upon the increase of ability in certain motor-test performances of 60 children, aged two and one-half to six and one-half years. The study also attempts to find age, sex, and individual differences in ability to hit a moving target with a thrown ball. Experimental methods were highly controlled and the data rigorously treated. Rather a thorough case study of the performance of each child is included as part of the report. The Moving Target Test is shown to have a reliability of .74 for an age range from three to six years. A bibliography of 41 items is appended.

S. WALLACE CALHOUN

CLARK, F. LESLIE. *Progress Tests in American History.* New York: Charles Scribner's Sons, 1930. 275 pp.

A publication suggesting the varied aspects of test development is a teacher's handbook entitled *Progress Tests in American History* prepared by F. Leslie Clark. This book is devoted entirely to information test items on various phases of American history. It is expected that a teacher will write these items on the board or dictate them to the class so as to provide a continuous day-by-day or week-by-week test effort.

Although it does suggest a technique for using tests and summarizes items of information which can be tested, the handbook does not represent the best-known testing procedure. Its value will lie largely in stimulating students to

study or in emphasizing the desirability of a continuous audit of learning. It does not, however, cover many of the most important aspects of instruction in history and as a result might unduly direct the attention of pupils toward one phase only of teaching objectives. It must be remembered that tests have enormous power in crystallizing objectives, and they must be used with due regard for the possible misuse of this influence. This possibility of misuse should inspire test constructors to put forth every effort to develop tests which measure each of the important objectives of instruction rather than limiting testing to information only.

RALPH W. TYLER

Books to Read

PHILLIPS, CLAUDE A. *Modern Methods and the Elementary Curriculum.* New York: Century Company, 1931. (Revised Edition) xvii+521 pp.

In this volume Mr. Phillips has undertaken the stupendous task of offering a brief history of each of the elementary-school subjects, the place of each in the curriculum, specific methods of presentation, a résumé of some of the outstanding research done in each field, and, finally, a list of objectives for each subject, followed by a tentative graded course of study.

His treatment, therefore, has been so brief and so kaleidoscopic that the content will be of little value to the advanced student. On the other hand, such condensed information is almost overwhelming for the beginner. However, since general methods courses continue to be offered, this book will serve to give the beginner a good introduction to what has been done and to present problems in the elementary field.

Mr. Phillips takes his place among those educators who believe that the child learns through activity and participation and that through all school activities and situations there are possibilities for character development which is the paramount function of education. The reviewer, delighted with this point of view, is disappointed with the author's treatment of the various courses of study for, in outlining these, he has fallen short of his own standards.

CATHARINE WILLIAMS

NATIONAL EDUCATION ASSOCIATION, DEPARTMENT OF SUPERVISORS AND DIRECTORS OF INSTRUCTION. *The Evaluation of Supervision.* New York: Teachers College, Columbia University, 1931. vii+181 pp.

The Fourth Yearbook is a co-operative enterprise. It is based upon published studies that have been made by various investigators, and upon recent case studies supplied from the supervisory field by the membership of the department. It also represents the consensus of the committee rather than the point of view of individual members. A tentative check list for self-analysis on the part of supervisors is included in the report.

The conclusions which, in the judgment of the committee, seem to be warranted from the studies reported are: (1) that supervision is effective in furthering growth in pupils; (2) that supervision resulting in superior growth in the pupils has had its effect in changing teachers and teaching procedure; (3) that supervisory activities differ in their relative effectiveness; (4) that demonstration teaching, group meetings, personal conferences, and construction of courses of study are the types of supervisory activities which have

proved most effective; (5) that the aids most welcomed by teachers are: constructive suggestions, constructive criticisms, and definite outlines of work dealing with methods, management, subjects, and materials of instruction; and (6) that teachers prefer the following characteristics in their supervisors: willingness to offer encouragement, sympathy, executive ability, open-mindedness, co-operation, and tactfulness.

AMY BRONSKY

SNEDDEN, DAVID EUGENE. *American High Schools and Vocational Schools in 1960.* New York: Teachers College, Columbia University, 1931. vi+122 pp.

This is not the first time that Mr. Snedden has indulged in educational prophecy. However, in this small volume he has assured for himself a more liberal latitude than usual by giving his forecastings in the form of a report on the American high school of 1960 by a commission of Chinese educators to their home government's National Board of Education. The author displays a considerable degree of optimism in foreseeing within the next thirty years the consummation of many present-day ideals of progressive education; the absorption within the regular curriculum of extra-curricular activities, and the emphasis upon proximate rather than deferred values.

Some progressive thinkers undoubtedly will find a note of pessimism in the view that by 1960 America will have crystallized into a more or less isolated, self-sufficient politico-economic society within a world composed of similarly insulated entities. Likewise, it appears a bit discouraging to discover that even by projecting his vision thirty years into the future, Mr. Snedden still conceives of culture as a transcendental something, mostly recondite, intangible, indefinable, probably because it must continue rather sharply dissociated from physical, vocational, moral, civic, religious, or any other practical aspect of living. On the whole, however, the volume is a wholesome challenge to progressive educational thinking.

WILLIAM H. STONE

HORNE, HERMAN HARRELL. *This New Education.* New York: Abingdon Press, 1931. 280 pp.

The reader who examines this volume with a view to securing an exposition and evaluation of "this new education" will be greatly disappointed. The treatment of the so-called "progressive movement" is rather sketchy and inadequate and turns out to be incidental to the main theme which appears to be the development of a handbook for workers in the field of religious education. The author presents an unconvincing critique of Dewey's educational philosophy in which he accuses Dewey of staking too much upon "experimentalism" to the neglect of "intuition and aesthetic experience of love and beauty." Basically his objection to Dewey is that he will have no traffic with the transcendental world and consequently fails to deal with the time-honored problems involving "God, freedom, and immortality." He fears that these basic problems will be neglected if other philosophers like Dewey "should hear this clarion call to social missions." The author commends Dewey's zeal for social and economic reform, but asks feelingly, "Would the social freedom to eat good bread really supplant the need for God and

immortality?" With such transcendent questions an adequate philosophy of education must be intimately concerned.

The author is consistent with this point of view for he devotes almost half of the book to the discussion of moral and religious problems. Exactly what much of it has to do with "the new education" is not apparent to the reviewer.

H. B. ALBERTY

* * *

George Washington and Education

[*Continued from page 42*]

"Promote then . . . institutions for the general diffusion of knowledge," a clause bearing signs that it was an afterthought, inserted after the Address was practically completed. In any case, it was not what Washington desired, but Hamilton had no keen interest in an institution promoted by Rush, Jefferson, and Madison. Illness also prevented him from complying with Washington's request.

It was Washington's plan that the national university should be of advanced grade offering a complete education, especially a political education for leadership in the Republic; and the other colleges of the country were to be "auxiliary," that is, I take it, tributary or preparatory. These were for undergraduates; that was to be a graduate institution. Such a school would make it unnecessary to send boys to Europe to complete their education where they were exposed to monarchical influences and European extravagance. It would develop friendships among the future leaders and thus help to destroy sectionalism. It would promote science and thereby add to the honor of the country. For the remaining views and the details of his activity, the reader must turn to Washington's *Writings*.[5]

[5] The best edition is by Worthington Chauncey Ford (*The Writings of George Washington*. New York: G. P. Putnam's Sons, 1892, 14 vols.); but if this is not available the Sparks edition will do. My references below are to the former.

An important letter on the national-university idea is found in the *Writings*, XIII, pp. 36–38; another addressed to Jefferson and which also canvasses the proposal to transplant the University of Geneva across the Atlantic, in XIII, pp. 48–52; the Will is in XIV, pp. 271–308. Discussions of the origins of this idea are found:

Hoyt, J. W. *Memorial to the Sen. of the U. S. on a National University*, Senate Miscell. Docs., 52d Cong. 1st Session.

Good, H. G. *Benjamin Rush and . . . Education*. Berne, Indiana: [1908], 283 pp. *See* pp. 171–213.

Ibid. "Who First Proposed a National University?" *School and Society*, III (March 11, 1916), pp. 387–91.

On the Farewell Address *see* the *Writings*, XIII, pp. 266–69, and the footnotes on the last of these pages.

NEW TESTS

THE American Civics and Government Tests for High Schools and Colleges has recently been prepared by F. A. Magruder, M. M. Chambers, and R. J. Clinton and published by the Public School Publishing Company, Bloomington, Illinois. This examination deals primarily with information about the machinery of government. It does not include civic problems which are being given an increasing amount of space in the modern textbooks in civics. Since it was constructed after analyzing a large number of commonly used textbooks in civics and government, it probably contains the information which is common to these books. The only other evidence of validity is the correlation with teachers' marks, which was .65; obviously this in itself is not an adequate evidence of the validity of the examination. The test is objective and has a reliability of .85, which means that it should not be used as a sole measure of an individual pupil. It is, however, useful as one indication of the information acquired by pupils in the class. Two forms of the test are now available.

Another test prepared for use by Citizenship or Civics classes is the Patterson Test or Study Exercises on the Constitution of the United States, published by the Public School Publishing Company, Bloomington, Illinois. This is primarily a test of the pupils' verbatim recall of statements appearing in the Constitution. As far as the reviewer can determine the possibilities of its use are limited. No evidence is presented as to its validity or reliability. On the face of it, the verbatim recall of the wording of the Constitution is no adequate test of the pupil's understanding of the provisions of that document.

THE desirability of measuring various aspects of human personality has long been recognized, and some attempts have been made to this end. Rating scales are among the common devices used for evaluating personality, but their chief weaknesses have been low reliability and lack of certainty that they really represent the aspects of personality under consideration. Various attempts have also been made to measure aspects of personality by the responses of subjects to many kinds of

questions. An illustration of this type is a recently published scale entitled "A Study of Values" prepared by G. W. Allport and P. E. Vernon, and published by Houghton Mifflin Company, Cambridge, Massachusetts. This scale, consisting of only forty-five items, attempts to get some evidence as to whether the personality of the subject is dominantly theoretical, economic, aesthetic, social, political, or religious. A scoring key is provided which rates the subject's responses upon each of these six bases. Obviously, difficulty of determining the validity of this test lies in getting a satisfactory rating for these aspects of personality. The authors have been able to obtain validity coefficients of only .45 to .60 when the scale is compared with ratings of these qualities. Furthermore, in its preliminary use the reliability coefficient was found to be only .72. These values are not high enough to use the scale with any confidence as a measuring instrument, but it may be found interesting for instructors of psychology and others who wish to illustrate the possibilities of such a device. To the reviewer, this scale is only one indication of the importance of getting better measures of the sum total of various reactions of persons which we call "personality." May additional studies in the future assist us in this objective.

In recent years teachers of shop courses have displayed great interest in objective examinations. A current illustration is the Wright Achievement Test in Mechanical Drawing, published by the Public School Publishing Company, Bloomington, Illinois. This test, constructed while Mr. Wright was an instructor at Purdue University, is an attempt to develop an examination which would separate entering Freshmen who had been well trained in mechanical drawing from those whose training was inadequate. The items were largely obtained from an analysis of the contents of textbooks which were later criticized by several teachers of mechanical drawing. The final check of validity was that the items discriminated between good and poor students. The test is more comprehensive than many of the tests available in the subject and is worthy of consideration. The reliability coefficient is .84, which is not high enough to be used as a single measure of the achievement of individual pupils, but it can be used in combination with other evidences of student accomplishment.

R. W. Tyler

CONFERENCE NOTES

THIRTY-SIX speakers from out of Ohio are being announced by the committee for the Twelfth Annual Ohio State Educational Conference to be held at Ohio State University, April 7–9. Their names and sections are:

John E. Anderson, University of Minnesota; Adult Education, Clinical Psychology, Home Economics.

Adelaide Ayer, State Teachers College, Milwaukee, Wisconsin; Teacher Training.

Frank W. Ballou, Washington Public Schools; Attendance Officers.

A. S. Barr, University of Wisconsin; County Superintendents.

Franklin Bobbitt, University of Chicago; High-School Principals, Junior High-School Principals.

Ruth Bristol, University of Michigan; Kindergarten.

Juvenilia Caseman, Hutchinson High School, Buffalo, New York; Commercial Education.

C. J. Chamberlain, University of Chicago; Biological Science.

Elsie Ripley Clapp, Ballard Memorial School; Art, Elementary Teachers.

Harold F. Clark, Teachers College, Columbia University; School Business Officers.

Robert D. Cole, University of North Dakota; Modern Languages.

Louis Ehrenfeld, Museum of Science and Industry, Chicago; Physical Science.

Hugh Hartshorne, Yale University; Religious Education, Educational Tests.

W. Wilbur Hatfield, University of Chicago; English.

Paul R. Heyl, United States Bureau of Standards; Physical Science.

Nellie Lee Holt, Stephens College; Religious Education, Physical Education.

B. Lamar Johnson, Stephens College; School Librarians.

Arthur J. Jones, University of Pennsylvania; Guidance Counselors.

C. H. Judd, University of Chicago; Higher Education, City Superintendents.

Walter Lippmann, *New York Herald-Tribune;* Journalism.

Paul S. Lomax, Haire Publishing Company; Commercial Education.

Esther McGinnis, American Home Economics Association; Home Economics.

Harry C. McKown, University of Pittsburgh; Village Superintendents.

Carl E. Milliken, former Governor of Maine; Visual Education.

Joy E. Morgan, National Education Association; Teacher Training, County Superintendents.

W. A. Oldfather, University of Illinois; Latin.

M. C. Otto, University of Wisconsin; Social Study.

W. C. Reavis, University of Chicago; Attendance Officers, Guidance Counselors.

Mary M. Reed, Teachers College, Columbia University; Kindergarten.

W. H. Schlauch, New York University; High-School Principals, Mathematics.

Harry A. Scott, Rice Institute; Physical Education.

David Snedden, Teachers College, Columbia University; Industrial Arts, Social Study.

Paul C. Stetson, Indianapolis Public Schools; City Superintendents, Elementary Teachers.

DeForest Stull, Teachers College, Columbia University; Geography.

L. L. Thurstone, University of Chicago; Educational Tests.

Herbert S. Weet, Rochester, New York, Public Schools; Special Education, Elementary Principals.